

We claim:

- 1 1. An integrated optical circuit comprising:
 - 2 an input waveguide;
 - 3 an imaging multimode interference device adapted to substantially remove all
 - 4 modes but a fundamental mode of an optical signal received from said input
 - 5 waveguide; and
 - 6 an optical power splitter structure in optical communication with said imaging
 - 7 multimode interference device.
- 1 2. The optical circuit of claim 1 wherein said multimode interference device includes
- 2 a primary output in optical communication with said optical power splitter structure
- 3 and a secondary output in optical communication with a dump port.
- 1 3. The optical circuit of claim 1 wherein said imaging multimode interference device
- 2 is a 1-to-1 device.
- 1 4. The optical circuit of claim 3 wherein said imaging multimode interference device
- 2 has a structure designed to reduce optical backreflections.
- 1 5. A method for suppressing propagating lateral waveguide field oscillations at the
- 2 input of an optical power splitter structure comprising fabricating an imaging
- 3 multimode interference device in optical communication with said optical power
- 4 splitter structure.
- 1 6. The method of claim 5 wherein said multimode interference device includes a
- 2 primary output in optical communication with said optical power splitter structure and
- 3 a secondary output in optical communication with a dump port and said method
- 4 further comprises receiving an error signal from said dump port and monitoring said
- 5 error signal for a substantial change.
- 1 7. The method of claim 5 wherein said optical power splitter structure is a
- 2 component of a interferometric modulator.

1 8. The method of claim 7 wherein said interferometric modulator is a Mach-Zehnder
2 modulator.

1 9. An integrated optical circuit comprising an imaging multimode interference device
2 in optical communication with an optical power splitting structure.

1 10. An integrated optical circuit comprising:

2 a semiconductor optical amplifier having an angled output; and

3 an imaging multimode interference device between said semiconductor
4 optical amplifier and said angled output.

1 11. The integrated optical circuit of claim 10 wherein said further has an angled input
2 and said imaging multimode interference device is a first imaging multimode
3 interference device and said integrated optical circuit further comprises a second
4 imaging multimode interference device between said semiconductor optical amplifier
5 and said angled input.

1 12. An integrated optical circuit comprising:

2 a waveguide device having an angled output; and

3 an imaging multimode interference device between said waveguide device
4 and said angled output.

1 13. Use of an imaging multimode interference device as an optical mode stripper in
2 an integrated optical circuit.

1 14. Use of an imaging multimode interference device to substantially remove all
2 modes but a fundamental mode of an optical signal received at an input to said
3 multimode interference device.

1 15. A semiconductor optical amplifier comprising:

2 an imaging multimode interference device adapted to substantially remove all
3 modes but a fundamental mode of an optical signal received from an input
4 waveguide; and

5 an electrode in contact with said multimode interference device adapted to
6 change the optical properties of said multimode interference device through
7 application of an electrical signal.

1 16. An optical attenuator comprising:

2 an input waveguide;

3 an imaging multimode interference device adapted to substantially remove all
4 modes but a fundamental mode of an optical signal received from said input
5 waveguide; and

6 an electrode adapted to apply a bias voltage to a surface of said imaging
7 multimode interference device.